AMENDMENTS TO THE CLAIMS

Please amend Claims 1, 14, and 18 of the Application as follows:

1. (Currently Amended) An address protocol for forwarding a message packet from a source node to a destination node along a sequence of communicatively coupled nodes functioning as a linear chain network, the address protocol comprising:

a relative source address field programmed with an initial value at the source node corresponding to a destination node that is a preselected number of nodes away from the source node along the linear chain network;

a relative destination address field containing a counter and a directional code corresponding to a port of the source node from which the message packet is to be sent along the linear chain network;

wherein the counter is incremented by a preselected step in value at each node the message packet is forwarded to along the chain network until the counter reaches the initial value, thereby indicating that the destination node has been reached;

an identifier field containing an identifier, wherein the identifier indicates whether the message packet contains relative address protocol information ~~to identify the message packet as having a relative address protocol~~; and

wherein the destination node does not require address information in addition to the counter reaching the initial value to accept the message packet.

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Canceled)

6. (Canceled)

7. (Previously Presented) The protocol of Claim 1, wherein the initial value is an integer having an absolute value equal to the desired number of node hops and the counter is incremented by a step in value of one at each node.

8. (Canceled)

9. (Previously Presented) The protocol of Claim 7, wherein the counter is initially set to zero and the counter is counted up by one at each node hop until the initial value is reached.

10. (Previously Presented) The protocol of Claim 1, wherein the initial value is a linear function of the desired number of node hops.

11. (Previously Presented) The protocol of Claim 1, wherein at least one node in the linear chain is a regenerator element.

12. (Previously Presented) The protocol of Claim 1, wherein the chain network is a virtual chain network.

13. (Previously Presented) The protocol of Claim 1, wherein the chain network comprises a portion of a ring network.

14. (Currently Amended) A method of sending a message packet along a portion of a network functioning as a linear chain network from a source node to a destination node using an address protocol having an identifier field containing an identifier, wherein the identifier indicates whether the message packet contains relative address protocol

information ~~to identify the message packet as having a relative address protocol~~, a relative source address field for storing an initial value, and a relative destination address field containing a counter and a directional code corresponding to a port of the source node from which the message packet is to be sent along the linear chain network, the method comprising the steps of:

selecting the initial value to be a function of a desired number of node hops along the linear chain network from the source node;

programming the relative source address field to have the initial value;

incrementing the counter by a preselected step in value at each node that the message packet is forwarded to; and

accepting the message packet at a destination node when the counter value reaches the initial value, without requiring address information in addition to the counter reaching the initial value to accept the message packet, and

wherein the preselected step in value is chosen so that the counter reaches the initial value when the packet has completed the desired number of node hops.

15. (Previously Presented) The method of Claim 14, wherein the message packet comprises a status query message and further comprising the steps of:

requesting the destination node to send a status message packet having a second relative source address field and a second counter in a direction along the chain back to the source node;

programming the second relative source address field to have the initial valued-incrementing the second counter by the preselected step in value at each node that the message packet is forwarded to; and

accepting the status message packet when the counter reaches the initial value,

wherein the status message packet is returned to the source node.

16. (Original) The method of Claim 15, wherein at least one of the nodes of the chain includes a regenerator element.

17. (Previously Presented) The method of claim 15, further comprising the steps of:

selecting a return message;

transmitting the return message in the direction to the source node;

incrementing the second counter by the preselected step in value at each node that the message packet is forwarded to; and

accepting the return message packet at the source node when the second counter reaches the initial value.

18. (Currently Amended) A method of sending a message packet along a chain network having regenerator nodes from a source node to a destination node using an address protocol having an identifier field containing an identifier, wherein the identifier indicates whether the message packet contains relative address protocol information ~~to identify the message packet as having a relative address protocol~~, a relative source address field for storing an initial value, and a relative destination address field containing a counter and a directional code corresponding to a port of the source node from which the message packet is to be sent along the linear chain network, the method comprising the steps of:

selecting the initial value to be a function of a desired number of node hops along the linear chain from the source node;

incrementing the counter by a preselected step in value at each node that the message packet is forwarded to; and

accepting the message packet at a destination node when the counter value reaches the initial value, without requiring address information in addition to the counter reaching the initial value to accept the message packet, and

wherein the preselected step in value is chosen so that the counter reaches the initial value when the packet has completed the desired number of node hops.

19. (Previously Presented) The method of Claim 18, wherein the message packet comprises a status query message and further comprising the steps of:

requesting the destination node to send a status message packet having a second relative source address field and a second counter back to the source node;

programming the second relative source address field to have the initial valued-incrementing the second counter by the preselected step in value at each node that.thè message packet is forwarded to; and

accepting the message packet when the second counter reaches the initial value,

wherein the status message packet is returned to the source node.

20. (Previously Presented) The method of Claim 19, further comprising the steps of:

sending a plurality of the status query messages to a plurality of destination nodes, the destination nodes corresponding to different initial values indicating that the destination nodes are each a different number of node hops from the source node;

receiving the status message packets from responding destination nodes; and

determining the relative distance of responding nodes as a function of the initial value corresponding to each responding node,

wherein a fault is isolated to a part of the network subsequent to the responding active node the greatest number of node hops from the source node.

21. (Previously Presented) The method of Claim 14, further comprising the step of:

detecting a fault in a linear chain of regenerator nodes using the relative address protocol by:

sending a first status query message packet requesting a return status message from a destination node at least one node hop from the source node; and

sending at least one subsequent status query message packet requesting a return status message from another destination node corresponding to a different number of node hops from the source node and recording whether the return status message is received at the source node; and

determining the node the greatest number of node hops from the source node replying to the status query message directed to it,

wherein a fault is isolated to a portion of the chain network subsequent to the node the greatest number of node hops from the source node returning the corresponding status message.